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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/852,267	05/10/2001	Keisuke Ban	0038-0358P	5452

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EXAMINER	
LIN, KUANG Y	

ART UNIT	PAPER NUMBER
1725	12

DATE MAILED: 12/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-12

Offic Action Summary	Application N .	Applicant(s)	
	09/852,267	BAN ET AL.	
	Examiner	Art Unit	
	Kuang Y. Lin	1725	

-- The MAILING DATE of this communication appears on th cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *11-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Beetle et al, Monroe et al, or Buchborn and further in view of Webbere, or unpatentable over Webbere and further in view of either Beetle et al, Monroe et al or Buchborn.

Each of Beetle et al, Monroe et al and Buchborn shows that it is conventional to provide a feeder head in a casting mold for feeding molten metal into mold cavity during solidification process to prevent solidification defect, such as surface sink, from occurring. Webbere shows to provide a deoxidizing compound in a mold

cavity to deoxidize the oxide film during a casting process and thereby reduce the cast defect. In view of the prior art teaching as a whole, it would have been obvious to provide the deoxidizing compound of Webbere in the process of either Beetle et al, Monroe et al, or Buchborn to reduce the oxide film. It would also have been obvious to provide the mold of Webbere with the feeder head of either Beetle et al, Monroe et al or Buchborn to prevent surface sink from occurring. With respect to claims 2, 3, 6, the particular process parameters as claimed depend on the alloy system to be cast as well as the molding material used. It would have been obvious to obtain the optimal process parameters through routine experimentation. With respect to claim 7, Monroe et al show that feature to be conventional. With respect to claims 8 and 9. Buchborn shows the claimed feature to be old.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Beetle, Monroe et al, Buchborn and Webbere as applied to claim 1 above, and further in view of Shekhter et al

Shekhter et al show that alkaline earth metal, such as magnesium gas, is a very strong reduction agent for reducing metal oxide. It would have been obvious to use the magnesium gas in the process of Webbere if a strong reduction agent is needed.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-10 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/097,483 or claims 1-9 of copending Application 10/115,141. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed disclosure of the copending applications disclose the invention as claimed.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 1-10 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. 10/166,743 in view of either Beetle et al, Monroe et al or Buchborn. The copending application substantially shows the invention as claimed except the feeder head. It would have been obvious to further provide the mold of the copending application with the feeder head of either Beetle et al, Monroe et al or Buchborn to prevent the surface sink from occurring.

This is a provisional obviousness-type double patenting rejection.

8. Applicant's arguments filed Dec. 4, 2002 have been fully considered but they are not persuasive.

a. In page 5, 2nd paragraph of the remarks applicants stated that the active gas of Webbere is an inert material and it does not react with the metal in order to remove an oxide from. However, in col. 3, line 24+ of Webbere it states that dichlorodifluoromethane is a **reactive gas** at the temperature of the melt, and the chlorine and the fluorine form a flux. For sake of argument, even if dichlorodifluoromethane is an inert material at the room temperature, it is a reactive material in the casting temperature. Applicants further stated that col. 2, lines 6 and 7 of Webbere refers to a "non-oxidizing gas atmosphere" and there is a difference between non-oxidizing and deoxidizing. However, the **reactive gas** is a deoxidizing gas, which also has a property of non-oxidizing gas since it does not oxidize the molten metal.

b. In page 6, 1st complete paragraph of the remarks applicants stated that neither reference teaches the feature of having different rates of cooling between the feeder head and the cavity. However, in Monroe et al a cooling block formed from a highly heat conductive metal and has spiral shaped cooling passageway 14 formed therein (see, for example, col. 3, line 47+). Also, insulating material is provided in the inlet chamber 22 (see, for example, col. 4, line 8+) and riser segment 41 (see, for example, col. 4, line 60+), respectively. Thus, the mold

embodiment of Monroe et al does provide a feature of having different rates of cooling between the feeder head and the cavity. Further, since there exists a difference in rates of cooling between the feeder head and the cavity, the microstructures such obtained will have a difference in the dendritic arm spacing (clearances) between the casting part at feed head and that at cavity (the relationship between the dendritic arm spacing d and the local solidification time t_f is : $d = a\ t_f^{\ n}$, wherein a is a constant and n = ½ for primary dentritic arm spacing and 1/3 to ½ for secondary dentritic arm spacing).

c. With respect to claim 4, since both Monroe et al and Beetle et al show to use insulating liners for retarding the heat transfer, it would have been obvious to use any type of insulating material for serving the same purpose as long as it will obtain the designated insulating result.

d. With respect to the argument as appearing in the junction paragraph between pages 6 and 7 of the remarks, even though Shekhter et al show the use of magnesium, rather than the magnesium nitride compound as claimed, it would have been obvious to those of ordinary skill in the art that any magnesium compound which possesses strong deoxidizing property can be used as a deoxidizing agent.

e. With respect to the argument as appearing in page 10, 1st complete paragraph of the remarks, it is noted that since claim 1 of the instant application use the language of "comprising the steps of" which is a open end format, it does not exclude the presence of a non-oxidizing atmosphere in the die as required in

the claim of '743 application, the sprue and the sequential solidification in a direction from a terminal portion of the cavity to the feeder head portion as required in the claim of '141 application and the molten metal being pressed toward the cavity as required in the claim of '483 application. Thus, the applicants' arguments are not deemed to be persuasive.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 703-308-2322. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas X Dunn can be reached on 703-308-3318. The fax phone numbers

for the organization where this application or proceeding is assigned are 703-305-7719 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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December 12, 2002

KUANG Y. LIN
EXAMINER
GROUP ~~320~~ 1725